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ROCKY MOUNTAIN FOREST AND RANGE EXPERIMENT STATION

Avalanche Fatalities in the United States, 1950-75

Knox Williams¹

Snow avalanches in the United States have caused 147 deaths over the last 25 years—an average of 6 deaths per year. In the last 5 years, however, the death rate has doubled to about 12 per year. Nearly three-fourths of all avalanche victims are recreationists.

Keywords: Avalanche, avalanche accidents.

In this Note we will look at snow avalanche fatalities in the United States for the last 25 years; that is, the winters of 1950-51 through 1974-75. Reasonably accurate records exist for this period so that the statistics can be presented with confidence. Only those fatalities that could be properly verified, as with formal accident reports, newspaper articles, and similar documentation are included in this summary. No doubt there are accidents that eluded the author's search and are not included; nonetheless, the statistics presented should put into perspective the scope and magnitude of the avalanche problem in the United States.

In the last 25 years there have been 147 avalanche fatalities in the United States—an average of 6 deaths per year. No winters have been without a fatality, although only one death occurred in each of 3 winters (1952-53, 1954-55, and 1960-61). The greatest number of deaths was 22 in 1974-75 (table 1).

The United States has not had, in the last 25 years, any catastrophic avalanches claiming scores of lives, as have occurred in other countries of the world. Loss of life in any single accident has been relatively small: The most serious accident claimed seven lives; two more accidents took five lives each; and three more, four lives each.

In its history, however, the United States has not been free of major avalanche catastrophies. The worst avalanche accident in United States history happened in the State of Washington in 1910, when

two snowbound railroad trains were swept off the tracks by a large avalanche; 96 men, women, and children lost their lives. In 1926, 40 lives were lost when an avalanche buried the mining community of Bingham Canyon, Utah.

An Upward Trend

In only 4 winters have avalanches claimed more than 10 victims, and 3 of these 4 winters have been in the last 5 years (fig. 1). The 5-year moving average in figure 1 smooths the data considerably. The

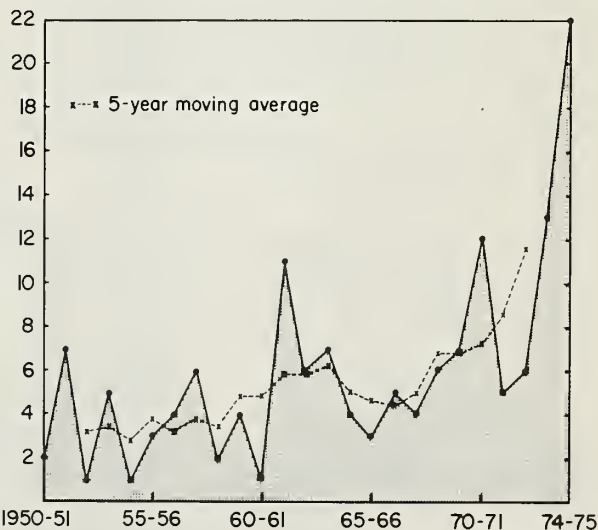


Figure 1.—The number of avalanche fatalities in the United States per winter (1950-51 to 1974-75) and 5-year moving average (dashed line).

¹ Meteorologist at the Station's Research Work Unit at Fort Collins; Station's central headquarters is maintained at Fort Collins, in cooperation with Colorado State University.

Table 1.—Fatal avalanche accidents in the United States, 1950-51 through 1974-75

Season and Date	Location	Fatalities	Season and Date	Location	Fatalities
1950-51			1967-68		
Apr. 23	Monarch Pass, Colo.	2 motorists	Nov. 26	Arapahoe Basin, Colo.	1 lift skier
1951-52			Feb. 19	Rock Canyon, Utah	1 hiker
Dec. 30	Wolf Creek Pass, Colo.	2 truckers	Feb. 24	Leadville, Colo.	1 snowmobiler
Jan. 19	Sun Valley, Idaho	4 lift skiers	Mar. 17	Mammoth Mt., Calif.	1 lift skier
Feb. 29	Cobalt, Idaho	1 snowplow driver	1968-69		
1952-53			Dec. 27	Slide Mt., Nevada	1 ski tourer
Feb. 7	Source Lake, Wash.	1 ski tourer	Feb. 24	Mineral King, Calif.	1 resident
1953-54			Feb. 25	Kyle Canyon, Nevada	2 residents
Feb. 12	Mt. Washington, N.H.	2 climbers	Mar. 9	Mt. Rainier, Wash.	1 ski tourer
Feb. 27	Harbor Mt., Sitka, Alaska	2 lift skiers	Mar. 16	Blackfoot River, Mont.	1 motorist
Apr. 2	Moon Pass, Wallace, Idaho	1 snowplow driver	1969-70		
1954-55			Dec. 29	Glacier N.P., Mont.	5 climbers
Jan. 15	Squaw Valley, Calif.	1 lift skier	Jan. 29	Alta, Utah	1 lift skier
1955-56			Mar. 2	Red Mt. Pass, Colo.	1 snowplow driver
Feb. 19	Mt. Washington, N.H.	1 climber	1970-71		
Mar. 2	Mace, Idaho	1 resident	Dec. 28	Mt. Baker, Wash.	1 lift skier
Mar. 5	Leeks Canyon, Wyo.	1 ski tourer	Dec. 28	Alum Creek, Reno, Nev.	1 snowmobiler
1956-57			Jan. 10	Juneau, Alaska	1 climber
Feb. 5	Wardner, Idaho	1 resident	Jan. 15	Snoqualmie Pass, Wash.	1 motorist
Feb. 24	St. Mary's Lake, Colo.	1 climber	Jan. 20	Willow Creek, Idaho	1 snowmobiler
Apr. 8	Berthoud Pass, Colo.	1 photographer, 1 hwy. employee	Jan. 24	Yodelin, Wash.	4 residents
1957-58			Mar. 16	Aspen, Colo.	1 ski tourer
Feb. 14	Camp Bird Mine, Colo.	3 miners, 1 hwy. employee	Apr. 12	Eklutna Glacier, Alaska	2 climbers
Mar. 9	Snow Basin, Utah	2 ski tourers	1971-72		
1958-59			Oct. 17	Pole Creek Mt., Colo.	1 hunter
Feb. 3	Aspen, Colo.	1 lift skier	Jan. 29	Slide Mt., Nevada	2 lift skiers
June 20	Mt. Hood, Oregon	1 climber	May 10	Garfield Peak, Wash.	2 climbers
1959-60			1972-73		
Feb. 13	Berthoud Pass, Colo.	1 ski tourer	Aug. 20	Mitchell Lake Glacier, Colo.	1 climber
Mar. 9	Superior Creek, Idaho	2 workers	Sept. 26	Yosemite N.P., Calif.	1 climber
Mar. 19	La Plata Peak, Colo.	1 climber	Dec. 8	Aspen, Colo.	1 lift skier
1960-61			Dec. 13	Steamboat Springs, Colo.	1 lift skier
Feb. 23	Aspen, Colo.	1 lift skier	Jan. 22	Sun Valley, Idaho	1 ski tourer
1961-62			Mar. 24	Taos, N.M.	1 lift skier
Nov. 24	Arapahoe Basin, Colo.	1 lift skier	1973-74		
Jan. 21	Twin Lakes, Colo.	7 residents	Oct. 13	Rocky Mt. N.P., Colo.	2 climbers
Feb. 10	Swift Creek, Wyo.	1 snowshoer	Nov. 19	Mt. Shasta, Calif.	1 climber
Mar. 25	Granite Mt., Wash.	2 climbers	Dec. 29	Park City West, Utah	1 lift skier
1962-63			Dec. 30	Flattop Mt., Alaska	1 climber
Dec. 31	Taberg, N.Y.	2 misc. recreationists	Jan. 1	Kotoya Peak, Alaska	1 climber
Mar. 3	Red Mt. Pass, Colo.	3 motorists	Jan. 16	Grand Teton N.P., Wyo.	3 ski tourers
May 18	Lundin Peak, Wash.	1 climber	Jan. 27	Source Lake, Wash.	2 snowshoers
1963-64			Feb. 7	Juneau, Alaska	1 snowplow driver
Mar. 7	Pocatello, Idaho	2 misc. recreationists	Mar. 2	Heavenly Valley, Calif.	1 lift skier
Mar. 12	Snow King, Jackson, Wyo.	1 lift skier	1974-75		
Mar. 14	Squaw Valley, Calif.	1 lift skier	Nov. 18	Mt. Rainier, Wash.	1 climber
Mar. 29	Snow Basin, Utah	1 ski tourer	Nov. 23	Arapahoe Basin, Colo.	1 lift skier
Apr. 4	Mt. Washington, N.H.	2 climbers	Dec. 15	Monarch Pass, Colo.	1 ski tourer
1964-65			Dec. 21	Guanella Pass, Colo.	1 ski tourer
Jan. 2	Sugar Bowl, Calif.	1 ski tourer	Dec. 28	Aspen, Colo.	1 lift skier
Jan. 29	Snowbank Mt., Idaho	1 snowplow driver	Jan. 9	Crested Butte, Colo.	1 lift skier
Jan. 31	Homestake Lake, Colo.	1 construction worker	Jan. 14	Monarch Pass, Colo.	2 ski tourers
Apr. 1	Gunnison, Colo.	1 construction worker	Jan. 15	Ashcroft, Colo.	1 ski tourer
1965-66			Jan. 16	Chugach St. Park, Alaska	1 climber
Dec. 20	Geneva Basin, Colo.	1 lift skier	Jan. 19	Owen Creek, Wyo.	1 ski tourer
Dec. 31	Park City, Utah	1 lift skier	Feb. 5	Sun Valley, Idaho	1 lift skier
Feb. 5	Mt. Baker, Wash.	1 ski tourer	Feb. 8	Centennial, Wyo.	1 innertuber
1966-67			Mar. 21	McGinnis Glacier, Alaska	1 climber
Jan. 7	Loveland Pass, Colo.	2 climbers	Mar. 23	Lion Mt., Mont.	1 snowmobiler
Feb. 12	Pharaohs Glen, Utah	1 climber	Apr. 26	Mt. St. Helens, Wash.	5 climbers
Feb. 18	Skyline, Idaho	2 lift skiers	Apr. 26	Mt. Hood, Oregon	1 climber
			May 10	Portage, Alaska	1 hunter

resulting trend is apparent: **Avalanche fatalities in the United States are increasing.** In the last 5 years, the average number of deaths has soared to 12 per winter, twice the 25-year average.

What are the causes of this trend, especially the jump in fatalities in the last 5 years? We will explore this question after first looking at some other data presentations.

Distribution by Month and by States

Figure 2 shows the monthly distribution of fatal avalanche accidents and number of fatalities. In all, 100 accidents have resulted in 147 victims, with January proving to be the most lethal month. This figure shows also that avalanches are not exclusively a winter phenomenon, but can and have occurred during the summer months. Only July has had no fatal accidents.

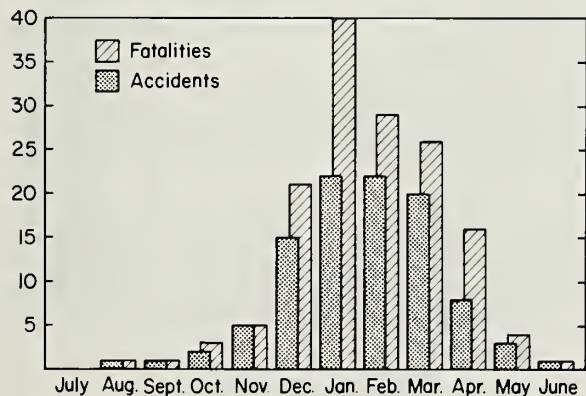


Figure 2.—Fatal avalanche accidents and fatalities by month (1950-51 to 1974-75).

In figure 3 we see the distribution of avalanche deaths by States. Colorado leads the list by far.

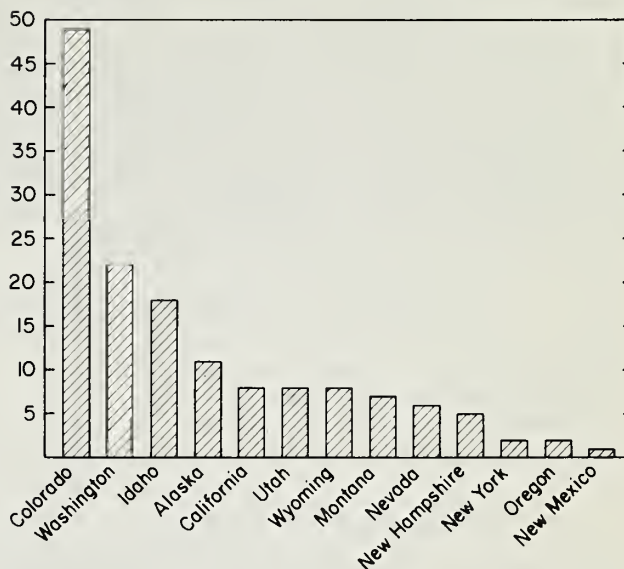


Figure 3.—Avalanche fatalities by States (1950-51 to 1974-75).

Distribution by Activity Groups

Figure 4 shows the distribution of avalanche fatalities by recreation and nonrecreation activity groups. The recreation groups include climbers, lift skiers, ski tourers, snowmobilers, and miscellaneous recreationists. Lift skiers and ski tourers are listed separately because lift skiers pursue their sport in and around developed ski areas and rely on ski lifts

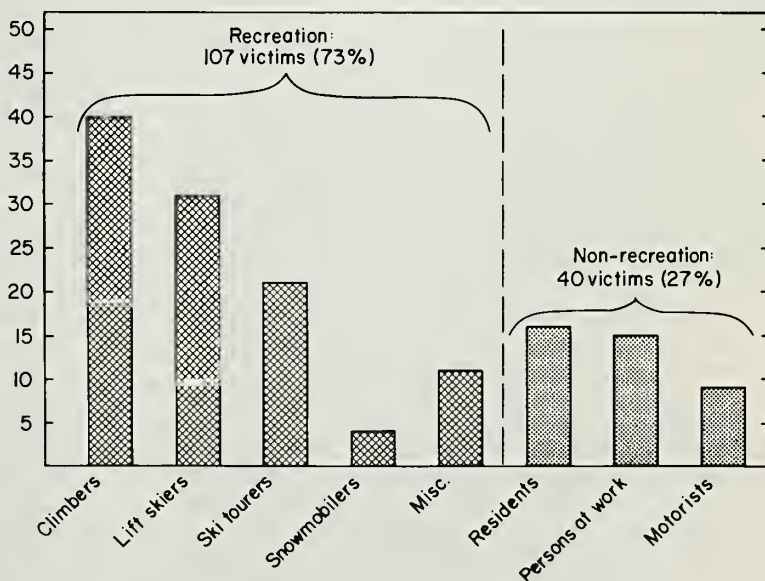


Figure 4.—Avalanche victims by activity categories (1950-51 to 1974-75).

to carry them uphill, whereas **ski tourers** take their pleasure in the backcountry, often far from any developed area. (Ski mountaineers are included as ski tourers.)

Snowmobilers have only recently fallen victims to avalanches; the first fatality of this sort occurred in 1968.

Miscellaneous recreationists include four persons playing in the snow, three snowshoers, two hunters, a hiker, and an innertuber.

The nonrecreation victims are made up of residents (persons in their homes or vacation homes), persons at work (miners, construction workers, power company workers, highway department workers—especially snowplow drivers—, and a photographer), and motorists (automobile drivers and passengers, and truck drivers).

Collectively, recreationists account for nearly three-fourths of all the fatalities.

Interpreting Recent Trends

We can now combine the facts shown in figures 1 and 4 to interpret trends in avalanche accidents. The recent jump in the number of avalanche deaths coincides with the phenomenal growth in winter sports. And, as figure 4 shows, winter recreationists have borne the brunt of avalanche fatalities. We can attribute the increase in deaths to one major cause: **More and more people—many with little or no avalanche-awareness training—are venturing into steep mountain terrain.** With the desire to get away from the crowd (and the rising expenses of lift skiing), many winter sports enthusiasts are now crossing steep slopes that had not before seen a climber, skier, or snowmobiler. With more people taking risks, the number of avalanche victims can only increase.

Comparison with Other Countries

Let us now compare the statistics for the United States with those of some other countries of the world. Austria appears to have the highest average yearly death toll—36 (table 2). Commenting on avalanche trends in Switzerland, Karl Breu (USDA-FS 1975) says:

In recent years, there has been a clear increase in avalanche accidents affecting skiers. As a result of increased opening up of the Alps and of the lower Alps, ever greater numbers of people are entering the mountains.

In Japan, Akitaya (1974) states that “recently there is a general tendency that avalanche accidents are decreasing in industrial and residential areas, and increasing in mountains and skiing areas.”

These trends echo precisely the current trends in the United States. Our zeal for winter recreation

Table 2.—Avalanche statistics from selected countries

Country and authority	Fatalities		Period of record
	Annual average	Total	
Austria (Aulitzky 1974)	36	751	1949-50 to 1969-70
Japan (Akitaya 1974)	27	1,555	1918-74
Switzerland (USDA-FS 1975)	25	743	1940-41 to 1969-70
Norway (Ramsli 1975)	12	1,600-1,700	1836-1975
France (Aulitzky 1974)	10	207	1949-50 to 1969-70
Italy (Aulitzky 1974)	10	206	1949-50 to 1969-70
Canada (Perla ¹)	6	30	1970-75
Yugoslavia (Aulitzky 1974)	5	96	1949-50 to 1969-70
Iceland (Jonsson 1957)	4	602	1800-1957
Germany (Aulitzky 1974)	3	55	1949-50 to 1969-70

¹Personal communication with R. I. Perla, Research Scientist, Glaciology Division, Environment Canada, Calgary, Alberta, 1975.

and our willingness to take risks in pursuit of pleasure often are not balanced by proper thought and preparation. Such attitudes will insure a generous number of avalanche victims every winter.

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